

NOTES ON THE *HAEMOLAEELAPS MARSUPIALIS* BERL. COMPLEX, WITH THE  
DESCRIPTION OF A NEW SPECIES OF THE GENUS (ACARINA,  
LAELAPTIDAE).

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(Two Text-figures.)

[Read 25th September, 1957.]

*Synopsis.*

The specimens of a *Haemolaelaps* recorded by Womersley, 1955, from the nests of mutton birds on Fisher Island, Bass Strait, as *H. marsupialis* Berl. are now referred to a new species, *H. flagellata*, nom. nov., and specimens from bandicoots from Queensland are shown to be different, being described and figured as the true *H. marsupialis* Berl.; the male of this species is described for the first time. A third species, *H. domrowi*, sp. nov., is figured and described from bandicoots from Queensland and Papua. A key to both sexes of the three species is given.

The genus *Haemolaelaps* with *marsupialis* as type was very briefly described by Berlese without any figures from specimens off a "bandicoot" from New South Wales (coll. Froggatt).

Since the original description only one authentic record of the species has been published (Domrow and Smith, these PROCEEDINGS, 1956, 80: 252) and the status of the genus and species has been uncertain. In 1955 the present writer described and figured both sexes of a *Haemolaelaps* from the nests of mutton birds on an island in Bass Strait as *marsupialis* Berl. on comparison with drawings made by Dr. Owen Evans of Berlese's type material in Florence.

At the same time specimens from bandicoots in the South Australian Museum and the Queensland Institute of Medical Research, Brisbane, from various localities in Queensland were referred to as the same species.

I am now greatly indebted to Mr. R. Domrow, of the Queensland Institute of Medical Research, for pointing out that there are certain small but significant differences between the species from mutton birds' nests and those from bandicoots, that only the bandicoot species can be referred to Berlese's species, and that the species from mutton birds' nests is new.

I now take the opportunity of renaming the mutton birds' nests species *Haemolaelaps flagellata*, nom. nov., a name which I had provisionally given to the specimens before deciding that they were Berlese's *H. marsupialis*. At the same time I now give a detailed description and figures of both sexes of the specimens from bandicoots, being in complete agreement with Mr. Domrow that these represent the true *H. marsupialis* Berlese. The male is recorded for the first time.

In addition, Mr. Domrow has discovered a third species, also from bandicoots, which he has kindly asked me to describe here, and which I am pleased to name after him. The key to the three species is partly based on a tentative one drawn up by him. The type specimens are deposited in the South Australian Museum.

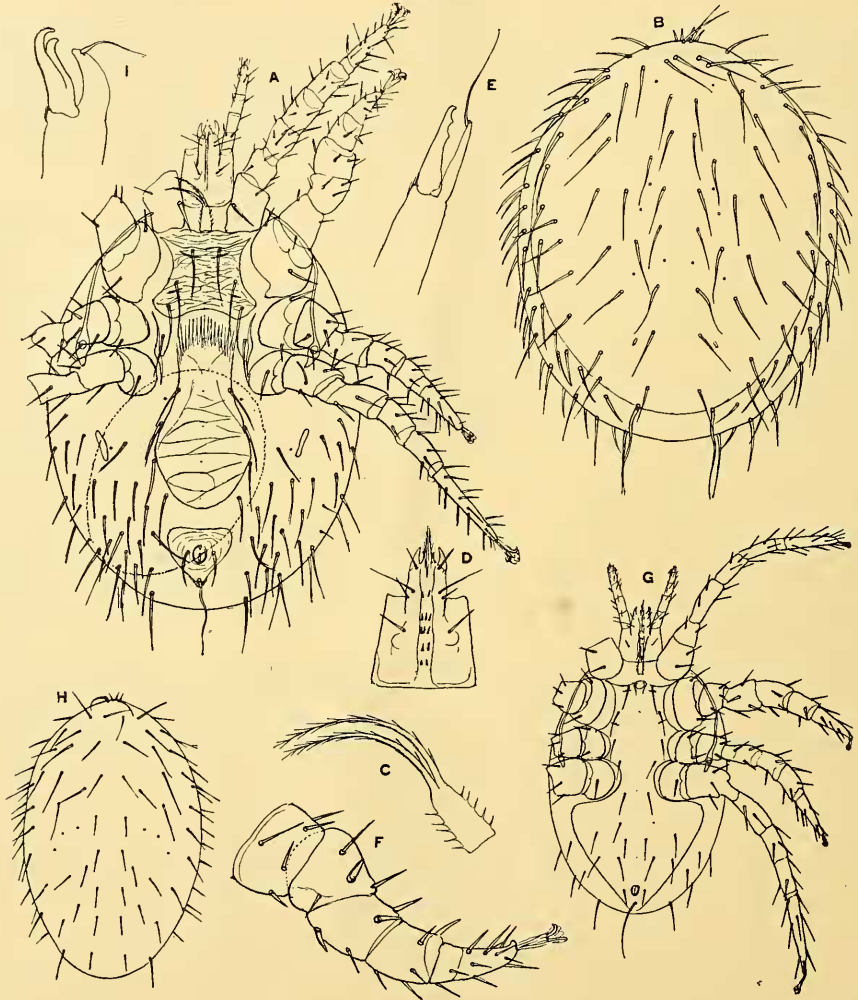
*HAEMOLAEELAPS MARSUPIALIS* Berlese, 1910. Text-fig. 1, A-I.)

*Laelaps (Haemolaelaps) marsupialis* Berlese, 1910. *Acari nuovi, Redia*, 6: 261, nec Womersley, 1955, *Aust. J. Zool.*, 3 (3): 423-5, fig. 7, A-E; Keegan, 1956, *J. Egyptian Pub. Health Assoc.*, 3 (6): 232.

*Female* (Text-fig. 1, A-F). A medium-sized, fairly well-chitinized oval form. Length of idiosoma  $820\mu$ , width  $580\mu$ .

*Dorsum*.—Dorsal shield ovoid,  $754\mu$  long by  $534\mu$  wide, furnished with long setae from  $85\mu$  to  $103\mu$  long, the posterior pair to  $190\mu$  long and the subposterior to  $80\mu$ ; under the front edge of the shield and below the vertical setae are four short setae as figured; in the gravid specimen figured the dorsal shield does not entirely cover the body.

*Venter*.—Tritosternum with spinate basal part and paired ciliated laciniae, no pre-endopodal shields but cuticle between base of tritosternum and sternal shield with a few striae; sternal shield wider than long, width between the postero-lateral angles  $209\mu$ , length  $141\mu$  (in median line  $116\mu$ ) with three pairs of long setae and two pairs of lyriiform pores, setae I  $103\mu$  long and  $56\mu$  apart, II  $103\mu$  long and  $122\mu$  apart, III  $112\mu$  long and  $150\mu$  apart, anterior margin lightly concave and posterior margin medially concave, surface reticulate; metasternal setae (endopodal setae of Keegan, 1956)  $94\mu$  long, situated inside of the endopodal shields of legs III–IV, metasternal shields absent; genito-ventral shield flask-shaped, longer than wide, expanded behind coxae IV with



Text-fig. 1, A–I.—*Haemolaelaps marsupialis* Berl. A–F female: A, venter; B, dorsum; C, tritosternum; D, gnathosoma; E, chelicerae; F, leg II. G–I male: G, venter; H, dorsum; I, chelicerae.

rounded but not semicircular posterior, with one pair of setae (genital)  $104\mu$  long, anterior end rounded and strongly fibrillated, length from genital setae to posterior  $232\mu$ , width  $232\mu$ , surface reticulate; anal shield triangular, slightly wider than long,  $117\mu$  long by  $128\mu$  wide, separated from genito-ventral by  $42\mu$ , with almost straight slightly concave anterior margin and almost straight sides, with the pair of paranal setae about in mid-line of anus and  $70\mu$  long, postanal seta very long, longer than

shield,  $151\mu$ ; metapodal shields elongate,  $56\mu$  long by  $10\mu$  wide, accompanied on the inside by a small round shieldlet; on the cuticle lateral to the genito-ventral and anal shields there are ca. 28 setae to  $131\mu$  long on each side; of these, three pairs flank the margin of the genital shield; stigma situated between coxae III and IV, the peritremal shield extending slightly posteriorly, and the peritreme running forward to coxae I.

*Gnathosoma* as figured, with four pairs of hypostomal setae, of which the third pair are much the longest, labial cornicles small and slightly sclerotized; palpi normal with 2-tined seta on tarsus; chelicerae as figured, movable digit slightly longer than the fixed digit, with two teeth and indistinct brush of setae at base, fixed finger more hyaline, simple, with long flagelliform subapical seta; deutosternum with five series of 2.3.3.2.2. denticles.

*Legs*.—All tarsi with fairly long caruncle and paired claws; leg II the stoutest, IV the longest, I  $580\mu$  long, II  $533\mu$ , III  $487\mu$ , IV  $672\mu$ , leg II with some of the setae stoutish and spine-like as figured; coxae with normal setae.

*Male allotype* (Text-fig. 1, G-I) smaller and less chitinized than the female; length of idiosoma  $578\mu$ , width  $360\mu$ .

*Dorsum*.—Dorsal shield entirely covering body, with long setae, of which those on disc are to  $47\mu$  long, lateral to these and on anterior half the setae are longer to  $80\mu$ ; marginal setae to  $47\mu$ , the posterior pair are  $61\mu$  long and the subposterior pair  $28\mu$ .

*Venter* with a single holovertral shield with the genital orifice in the middle of the anterior margin and in front of anterior pair of setae. The whole holovertral shield and area between base of tritosternum and anterior margin reticulate; inter-coxal portion of shield with four pairs of setae and three pairs of pores, setae I  $56\mu$  long and  $47\mu$  apart, II  $52\mu$  long and  $84\mu$  apart, III  $52\mu$  long and  $94\mu$  apart, IV (metasternal)  $47\mu$  long and  $70\mu$  apart; the holovertral shield expands immediately behind coxae IV to  $244\mu$  and then the sides converge to the posterior margin embracing the anus, with six pairs of setae besides the paranal and the postanal setae, paranal setae  $47\mu$  long, postanal  $94\mu$ ; with two setae on each side of the shields; stigma and peritreme as in female.

*Gnathosoma*.—Chelicerae as figured, movable digit with strong curved spermatophore carrier extending beyond tip; otherwise as in female.

*Legs*.—II the stoutest, IV the longest, I  $556\mu$  long, II  $430\mu$ , III  $383\mu$ , IV  $615\mu$ ; setation as in female.

*Remarks*.—The above description and figures are from the following specimens: *Female* from one of four specimens on one slide received from Mr. Domrow and collected on *Perameles nasuta* from Mt. Glorious, Queensland, Aug. 28th, 1956, and *male allotype* from one of two specimens from Mr. Domrow collected from *Thylacis* (= *Isoodon*) *obesulus* from Mt. Nebo, Queensland, Oct. 5th, 1951.

The following records of *H. marsupialis*, s. str., in the Q.I.M.R. have been kindly furnished by Mr. Domrow. They include the specimens recorded by Domrow and Smith (loc. cit.) which were exclusively *marsupialis*.

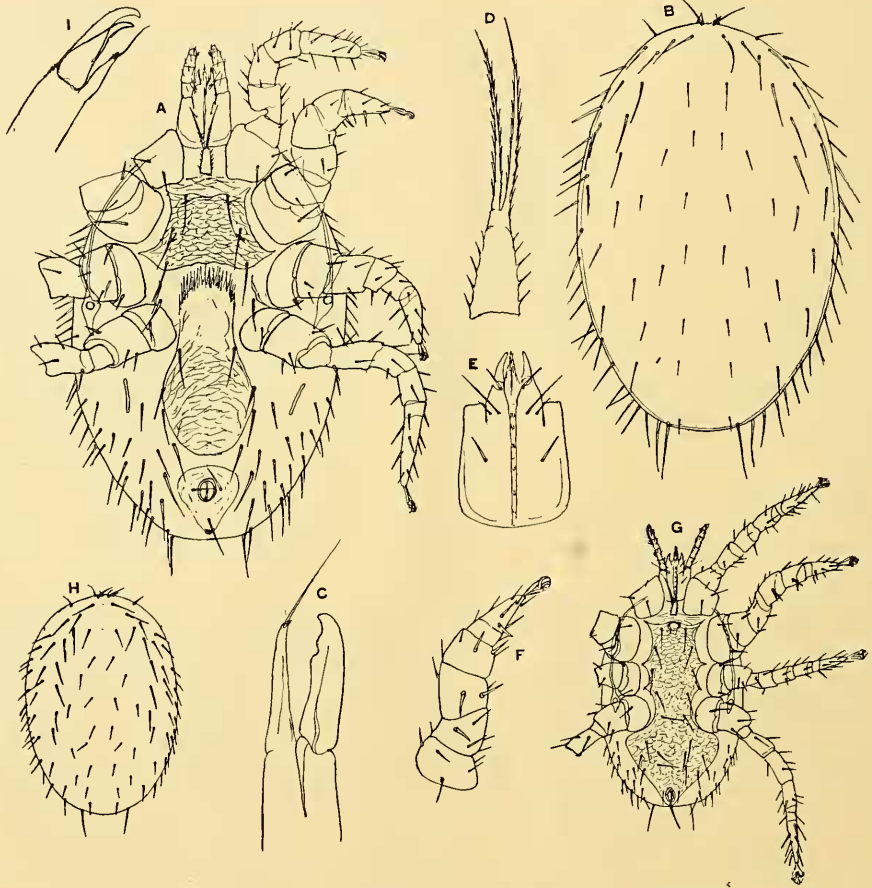
Host Number.	Host.	Locality.	Date.	Collector.
—	<i>Thylacis</i> (= <i>Isoodon</i> ) <i>obesulus</i> .	Camp Mt., S.E.Q.	5.10.53	E. N. Marks.
309	" "	Taringa, Brisbane.	7.10.50	E. H. Derrick.
314	" "	Mt. Nebo, S.E.Q.	31.10.50	" "
316	" "	Taringa.	1. 2.51	" "
339	" "	Paddington, Brisbane.	5.10.51	" "
353	" "	Mt. Coot-tha, Brisbane.	18. 6.52	" "
371	" "	Mt. Nebo.	6. 8.54	R. Domrow.
404	" "	Paddington.	10. 8.55	" "
409	" "	" "	15. 8.55	" "
411	" "	" "	22. 8.55	" "
415	" "	Mt. Glorious, S.E.Q.	30. 8.55	" "
417	<i>Perameles nasuta</i> .	" "	1. 9.55	" "
446	<i>Thylacis obesulus</i> .	Paddington.	4.11.55	J. H. Pope.
474a	<i>Perameles nasuta</i> .	Mt. Glorious.	22. 8.56	R. Domrow.

It may be noted that nos. 415, 417, and 474a had both *H. marsupialis* and *H. domrowi*, n. sp., present. On the bandicoot very numerous specimens of *H. marsupialis* were crowded around the base of the tail, simulating a dark brown scab, while the specimens of *H. domrowi* were scattered at random in the fur of the rump and flanks.

HAEMOLAELAPS FLAGELLATA, ROM. NOV.

*Haemolaelaps marsupialis* Womersley, 1955, *Aust. J. Zool.*, 3 (3): 423-5, fig. 7, A-E.

As pointed out in the introductory remarks, Mr. Domrow has indicated to me that the species described by me as *H. marsupialis* Berlese from the nests of mutton birds



Text-fig. 2, A-I.—*Haemolaelaps domrowi*, sp. nov. A-F female: A, venter; B, dorsum; C, chelicerae; D, tritosternum; E, gnathosoma; F, leg II. G-I male: G, venter; H, dorsum; I, chelicerae.

differs in detail from the drawings of Berlese's material made by Dr. Owen Evans, who noted that the dorsal setae were long. It is therefore necessary to rename my material, and the name *flagellata* is proposed.

*Flagellata* is much larger than both *marsupialis* Berlese and the new species described below. The length of the idiosoma is  $910\mu$  and the width  $793\mu$ . The genito-ventral shield is much more evenly rounded, with the posterior part of the disc a semicircle. The spines on tarsus II are stronger than in the bandicoot species. It is, so far, only known from the nests of mutton birds on Fisher Island in Bass Strait.

## HAEMOLAEELAPS DOMROWI, sp. nov. (Text-fig. 2, A-I.)

*Female holotype*.—A small, oval, lightly chitinized species. Length of idiosoma  $533\mu$ , width  $360\mu$

*Dorsum*.—Dorsal shield covering the whole dorsum; setae on the disc weak and short,  $23\mu$  long, laterally and marginally to  $61\mu$ , posterior two pairs of setae  $75\mu$  and  $28\mu$ .

*Venter*.—Tritosternum with spinate base and paired ciliated laciniae; no pre-endopodal shield; cuticle between base of tritosternum and anterior of sternal shield lightly striated; sternal shield wider than long, width between the postero-lateral angles  $160\mu$ , length  $94\mu$  (in median line  $85\mu$ ), anterior margin almost straight and sinuous, posterior margin medially lightly concave, with three pairs of long setae and two pairs of lyriform pores; setae I  $63\mu$  long and  $50\mu$  apart, II  $77\mu$  long and  $94\mu$  apart, III  $77\mu$  long and  $110\mu$  apart, surface lightly reticulate; metasternal shields absent but setae  $63\mu$  long situated inside of the endopodal shields of coxae III and IV; genito-ventral shield flask-shaped, longer than wide, expanded behind coxae IV with rounded but not semicircular posterior, with one pair of setae  $63\mu$  long and  $180\mu$  apart, length from its setae to posterior  $154\mu$ , width  $132\mu$ , anterior end rounded and fibrillated, surface lightly reticulate; anal shield triangular but with rounded or convex anterior margin, separated from genito-ventral shield by only  $14\mu$ , as long as wide,  $84\mu$  by  $84\mu$ , paranal setae  $33\mu$ , postanal seta  $55\mu$ ; metapodal shields elongate and narrow,  $41\mu$  long by  $6\mu$  wide; on the cuticle lateral to the shields with about twenty long setae on each side, three pairs of which flank the genito-ventral shield; stigma between coxae III and IV, peritremal shield produced a little posteriorly and peritreme running forward to coxa I.

*Gnathosoma* as figured with four pairs of hypostomal setae, of which the third pair is much the longest, labial cornicles small and lightly sclerotized, palpi normal with 2-tined seta on tarsus; chelicerae as figured, movable digit very slightly over-reaching tip of fixed digit and with two strong teeth, fixed digit simple with long flagellate subapical seta.

*Legs*.—All tarsi with paired claws, moderately long caruncle and pad, II the stoutest and IV the longest, I  $446\mu$ , II  $376\mu$ , III  $352\mu$ , IV  $470\mu$ , some of the setae on II strong but not much more so than the rest, coxal setae normal.

*Male allotype* small and lightly sclerotized; length of idiosoma  $464\mu$ , width  $335\mu$ .

*Dorsum*.—Dorsal shield entirely covering body, with the discal setae short,  $20\mu$ , lateral and marginal longer to  $40\mu$ , the posterior two pairs  $63\mu$  and  $16\mu$ .

*Venter*.—A single holovertral shield with the genital orifice in the anterior margin; intercoxal portion with four pairs of fairly long setae and three pairs of pores, setae I  $41\mu$  long and  $36\mu$  apart, II  $47\mu$  long and  $74\mu$  apart, III  $55\mu$  long and  $77\mu$  apart, IV (metasternal)  $49\mu$  long and  $63\mu$  apart; the holovertral shield expands immediately behind coxae IV to  $225\mu$  and then converges to apex of body embracing the anal shield with six pairs of setae besides the paranal and postanal setae, paranal setae  $19\mu$  long, postanal setae  $44\mu$ ; lateral to the shields with 8–10 setae on each side; surface of shield reticulate.

*Gnathosoma* as in the female; chelicerae as figured, movable digit with strong curved spermatophore carrier over-reaching tip, fixed digit short, not much more than half the length of movable digit and with a long flagellate subapical seta.

*Legs*.—II the stoutest, IV the longest, I  $423\mu$  long, II  $352\mu$ , III  $392\mu$ , IV  $447\mu$ ; tarsi II with some of the setae fairly strong.

*Loc. and Hosts*.—The holotype female and three paratype females on one slide from Mr. Domrow collected from *Perameles nasuta* No. 474a from Mt. Glorious, Queensland, 22nd Aug., 1956 (coll. R.D.). The allotype male and two paratype males from No. 417 from *P. nasuta* from Mt. Glorious, 1st Sept., 1955 (coll. R.D.).

Also four females from host No. 417, and two males and one female from *I. obesulus*, from Innisfail, 28th Sept., 1955 (coll. R.D.).

In correspondence Mr. Domrow states that he also has this species from an as yet undetermined bandicoot from Papua.

*Key to the Species of the Haemolaelaps marsupialis Complex.*

1. Females ..... 2.  
Males ..... 4.
2. Larger species, length of idiosoma  $900\mu$ ; dorsal shield with setae on disc  $39\mu$  long, on edges of shield and on surrounding dorsal cuticle from  $90\mu$  to  $117\mu$  long, posterior two pairs of setae on dorsal shield  $112\mu$  and  $38\mu$ ; posterior half of disc of genito-ventral shield rounded semicircular; anal shield wider than long in ratio of 1.25:1.0, post-anal setae as long as shield; genito-ventral and anal shields  $42\mu$  apart. In mutton birds' nests ..... *H. flagellata*, nom. nov.  
Smaller species; length of idiosoma not exceeding ca.  $750\mu$ ; posterior half of disc of genito-ventral shield rounded but not semicircular. On bandicoots ..... 3.
3. Larger species, length of idiosoma  $750\mu$ ; dorsal shield with long setae on the disc as well as laterally, from  $85\mu$  to  $103\mu$ , posterior two pairs of setae on dorsal shield  $190\mu$  and  $80\mu$ ; anal shield slightly wider than long in ratio 1.1:1.0, postanal seta much longer than shield; genito-ventral shield and anal shields  $47\mu$  apart ..... *H. marsupialis* Berl.  
Smaller species, length of idiosoma  $533\mu$ ; dorsal shield with short,  $23\mu$ , setae on disc and to  $61\mu$  laterally and posteriorly, posterior two pairs on shield  $75\mu$  and  $28\mu$ ; anal shield with anterior margin convex, as long as wide, in ratio 1.0:1.0, postanal seta shorter than length of shield; genito-ventral and anal shields ca.  $14\mu$  apart . *H. domrowi*, sp. nov.
4. Larger species, idiosoma to  $670\mu$  long; dorsal setae as in female but shorter; postanal seta about as long as from its base to anterior of anus ..... *H. flagellata*, nom. nov.  
Smaller species, idiosoma not exceeding  $580\mu$ , postanal seta longer than distance from its base to anterior of anus ..... 5.
5. Larger species, idiosoma  $580\mu$ ; disc of dorsal shield with long setae; postanal seta much more than twice as long as distance from its base to anterior of anus ..... *H. marsupialis* Berl.  
Smaller species, idiosoma  $460\mu$ ; disc of dorsal shield with very short setae; lateral and marginal setae longer; postanal seta about twice as long as distance from its base to anterior of anus ..... *H. domrowi*, sp. nov.